

CLAIMS

1. An air conditioning system for a motor vehicle, comprising:

- 5 - an air distributor device (1) including:
 - a structure (2) defining a main conduit (3) and a plurality of outlet conduits (4, 5, 6) communicating with the main conduit (3) and to be connected to a plurality of outlets for the outflow of air into the
10 motor vehicle passenger compartment,

 - Coanda effect distributor means mounted in the structure (2) of the distributor device (1) and movable to a plurality of operative positions each causing deviation, by the Coanda effect, of the air flowing
15 through the main conduit into a selected one of said outlet conduits,

 characterised in that said distributor device (1) further comprises:

- a radiating mass (10) positioned upstream of the
20 main conduit (3) in such a way as to be traversed by the flow of air which arrives into the main conduit (3) from an inlet conduit (7) of the distributor device (1), to heat said flow of air,

 - means which determine a variation of the
25 temperature of the flow of air conveyed in said main conduit, said means being controlled by said Coanda effect distributor means, in such a way that the temperature of the air flowing out of the distributor device is a function of the operative position of said
30 Coanda effect distributor means.

2. An air conditioning system as claimed in claim 1, characterised in that said distributor device (1) further comprises a by-pass conduit (15) which connects the inlet conduit (7) to the main conduit (3) in
35 parallel to the portion of conduit where the aforesaid

radiating mass (10) is positioned, and means (22) for throttling said by-pass conduit (15) for variably obstructing said by-pass conduit (15) depending upon the various operative positions of the Coanda effect distributor means which determine the deviation of the flow of the main conduit (3) into one of the aforesaid outlet conduits (4, 5, 6), in such a way that the temperature of the flow of air exiting the distributor device (1) has different values depending on which outlet conduit (4, 5, 6) has been selected through said Coanda effect distributor means.

3. An air conditioning system as claimed in claim 2, characterised in that said Coanda effect distributor means comprise at least a flow perturbing member (16) having at least two different operative positions to cause the deviation, by Coanda effect, of the flow of air that travels through the main conduit (3) at least into a first or into a second outlet conduit (4, 5, 6), and in that said throttling means (22) are constituted by a shutter, mechanically connected to said flow perturbing member (16).

4. An air conditioning system as claimed in claim 3, characterised in that said flow perturbing member (16) is a rocker arm member having opposite operative ends (18, 19) situated in correspondence with two openings (20, 21) formed in a lateral wall (3a) of the main conduit (3) and in that said rocker arm member (16) has a first end operative position, in which one of its opposite ends (18, 19) protrudes through the respective opening (20, 21) inside the main conduit (3), a second operative position in which the other operative end of the rocker arm member (16) projects through the respective opening (20, 21) inside the main conduit (3) and a third operative position, intermediate between the two previous ones, in which

neither of the two operative ends (18, 19) protrudes inside the main conduit (3), and in that said shutter (22) is defined by the same structure constituting the aforesaid rocker arm member (16).

5 5. An air conditioning system as claimed in claim 4, characterised in that in the aforesaid first end operative position of the rocker arm member (16), the shutter (22) leaves the aforesaid by-pass conduit (15) completely unobstructed and in the aforesaid second end
10 operative position of the rocker arm member (16), the shutter (22) completely obstructs the by-pass conduit (15).

15 6. An air conditioning system as claimed in claim 5, characterised in that in said third intermediate operative position of the rocker arm member (16), the shutter (22) partially obstructs the by-pass conduit (15).

20 7. An air conditioning system as claimed in claim 5, characterised in that in the aforesaid third intermediate operative position of the rocker arm member (16) the shutter (22) completely obstructs the by-pass conduit (15).

25 8. An air conditioning system as claimed in any of the previous claims, characterised in that the distributor device further comprises a mixing controlling shutter (11) which controls an opening (13) which places the inlet conduit (7) in communication directly with the main conduit (3), in parallel with respect to the conduit portion in which the radiating
30 mass (10) is positioned.

35 9. An air conditioning system as claimed in any of the previous claims, characterised in that it comprises an air distributor and mixer assembly comprising a plurality of main conduits set mutually side by side and each communicating with a plurality of outlet

conduits, each main conduit being provided with respective Coanda effect distributor means, with a respective by-pass conduit and with respective throttling means (22).

5 10. An air conditioning system as claimed in claim 1, characterised in that it comprises three outlet
10 conduits (4, 5, 6) respectively to be connected to outlets which direct the air adjacent to the floor of the motor vehicle passenger compartment, to outlets
15 situated in the front part of the dashboard of the motor vehicle oriented towards the occupants of the motor vehicle, and to outlets situated at the base of the windshield of the motor vehicle, and in that the
20 aforesaid throttling means are shaped and positioned in such a way as to generate in the main conduit (3) a flow having a first, relatively lower, temperature, when the Coanda effect distributor means deviate the
25 flow of air into the outlet conduit (5) communicating with the front outlets, a flow of air at a second, relatively higher temperature when the Coanda effect distributor means send the flow of air from the main
30 conduit (3) to the outlet conduit (4) connected to the outlets adjacent to the floor of the motor vehicle passenger compartment, and a flow of air having a third, still higher temperature, when the Coanda effect
35 distributor means deviate the flow of air from the main conduit (3) to the third outlet conduit (6) communicating with the outlets situated at the base of the windshield of the motor vehicle.

30 11. An air conditioning system as claimed in claim 1, characterised in that it is provided with means for regulating the heating or cooling air including a
35 mixing controlling shutter (11) which controls an opening (13) that places the inlet conduit (7) of the distributor device directly in communication with the

main conduit (3) in parallel to the portion of conduit in which the radiating mass (10) is positioned, characterised in that said mixing controlling shutter (11) is operatively connected to said Coanda effect distributor means, in such a way that to different operative positions of the Coanda effect distributors also correspond different operative positions of the mixing controlling shutter (11).

12. An air conditioning system as claimed in claim 5, characterised in that said mixing controlling shutter (11) is provided with an appendage (11a) which completely obstructs the by-pass conduit (15) when the mixing controlling shutter is in the position of complete obstruction of the aforesaid by-pass opening (13).

13. An air conditioning system as claimed in any of the previous claims, comprising at least two main conduits (3) set mutually side by side, communicating with respective sets of outlet conduits (4, 5, 6) which in turn are connected to a series of outlets situated in the central part of the dashboard of the motor vehicle and to a series of outlets situated on a side of the dashboard of the motor vehicle, characterised in that to the two aforesaid main conduits is associated a single mixing controlling shutter (11) comprising two portions (110, 111) angularly offset from each other and positioned in a single chamber for feeding air to the two main conduits, in such a way as to favour a greater flow of cold air towards the main conduit communicating with the central outlets than towards the main conduit communicating with the lateral outlets.